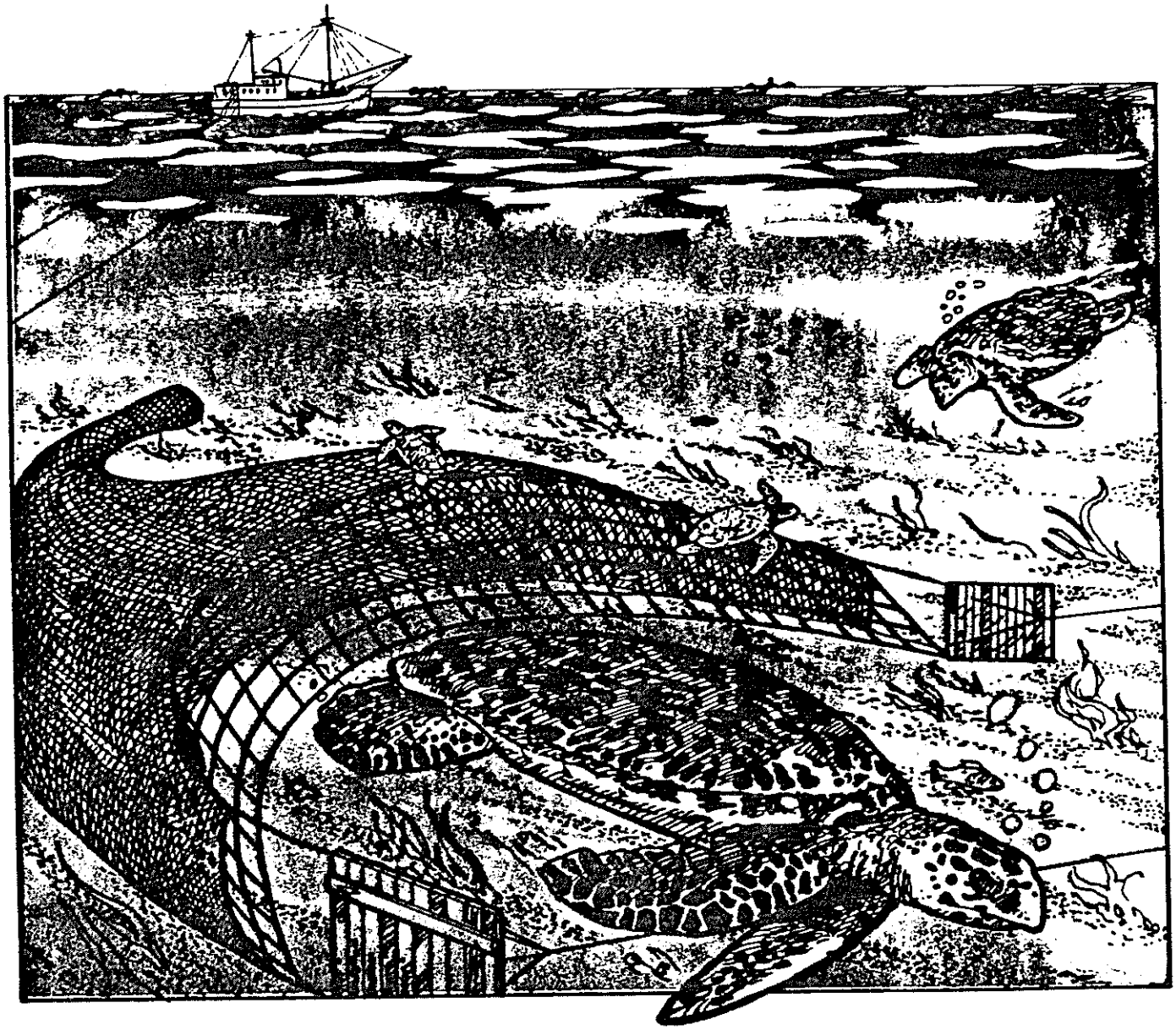
noaa reprint
VOLUME 9 NUMBER 1 JANUARY 1979

The Troubled Turtle

By GERALD D. HILL, JR.

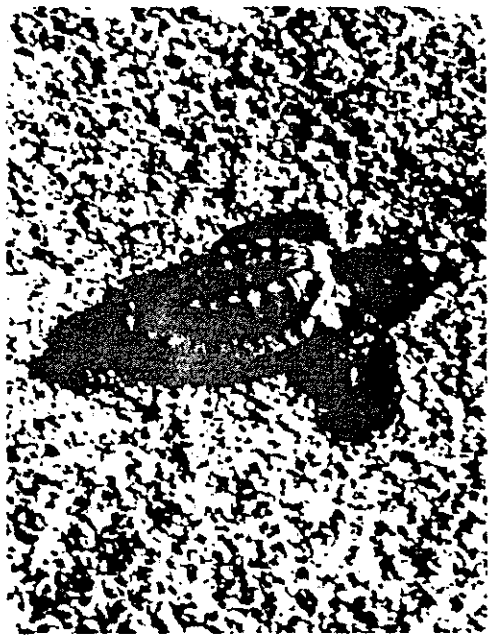


The Troubled Turtle

By GERALD D. HILL, JR.

The turtle lives 'twixt plated decks
Which practically conceal its sex;
I think it clever of the turtle
In such a fix to be so fertile.

— Ogden Nash



Not clever enough, unfortunately. However ingenious its solutions to short-term problems the sea turtle, at least, is in a jam.

It may, in fact, be in danger of extinction.

Man has exploited the sea turtle for centuries. In addition Nature, at times, has joined with man in what appears to be an effort to wipe them from the face of the earth.

Nobody knows how many sea turtles there are, but the numbers are declining at such a rate that some of the species will be extinct in a few years if nothing is done to reverse the trend.

Historical records show great numbers of turtles caught as early as the 17th century. Up to 800 turtles were taken by one man in one month in Dry Tortugas, Fla. Off Cape Hatteras, N.C., 100 green turtles were taken per day per man. In the Cayman Islands, 1,000 to 2,000 turtles were taken in one night in 1603. Today, turtles do not occur in these areas in anywhere near the numbers that they used to.

However, something is being done, and if present efforts by the National Marine Fisheries Service and others are successful, one day the number of sea turtles may approach their original numbers.

Seven kinds of sea turtles are found in the world: leatherback, hawksbill, green, loggerhead, Kerup or Atlantic ridley, olive or Pacific ridley, and flatback.

The leatherback, the largest, grows to 650–1,200 pounds. It is found throughout the tropical seas of the world, with the largest concentration in the South China Sea. The hawksbill grows to 150–200 pounds. Little is known about the distribution or nesting beaches of the hawksbill, but it has a wide range. The green turtle grows to 250–450 pounds. It is estimated that the world population of these turtles is between 100,000 and 400,000. The largest concentration, about 100,000, is found off Queensland, Australia, with the second most abundant stock of approximately 60,000 found in the western Caribbean. Less than a few hundred are thought to nest along the Florida coast.

One of the largest populations of loggerhead, approximately 40,000, is found off the Florida and Carolina coasts, with another 30,000 thought to be in the vicinity of the Gulf of Oman in the Mid-East. The largest population of Pacific ridley turtles, 450,000, is found in the waters of Costa Rica. The Atlantic and Pacific ridleys are the smallest of the sea turtles and reach about 80–100 pounds when full grown.

Some of the sea turtles seem to have the nesting instincts similar to those of the salmon. They appear to return to the same beaches each year to lay their eggs. The green turtles can be counted among this type, while the loggerhead doesn't seem to have this drive to return to the same beach each nesting season.

Three theories concern the ability of the turtles to return to their nesting beaches. Some scientists believe they navigate by the stars. Others think they can sense the differential rotation of the earth with changing latitudes. Finally, other scientists believe they can taste or smell their routes to the nesting beaches.

Turtles coming to nesting beaches number in the hundreds. Usually during the night, they slowly drag themselves up on shore and dig large holes in the warm, moist sand with their flippers, there they lay their eggs. They cover the holes with sand and then begin their slow trip back to the sea.

The eggs remain in the sand for approximately two months, and as they hatch, the small turtles dig themselves out of the sand and scoot toward the water. The female often lays as many as 200–300 eggs each nesting season, but all too many fail to hatch, and most hatchlings die before reaching maturity.

Nobody seems to know what happens to the turtles during their first year. Those that survive disappear for almost a year and are believed to drift to sea and live in sargassum weeds that float in large mats in the sea.

The main reasons for the decline in the sea turtle population of the world are believed to be overexploitation, loss of habitat, predation, and incidental killing.

Man has been the biggest factor in the reduction of the numbers of turtles. The green turtle has been subjected to tremendous commercial exploitation. The turtle is used for meat, soup, leather, and cosmetics. Loggerheads are subject to less intensive hunting because the meat does not taste as good as the green. However, loss of habitat, predation on eggs by raccoons, and incidental drownings by fishers are believed to have resulted in the decline of this species. The Pacific ridley is hunted intensively for its leather but seldom caught for its meat. The Pacific ridley is hunted most intensely on the Pacific coast of Mexico. Scientists estimate that since the early 1960's, between 500,000 and 1,000,000 Pacific ridleys have been taken. In Oaxaca State, Mexico, in 1977, 70,000 female Pacific ridleys were killed from a population of 150,000.

Action to save these and other species is in large part dependent on the Endangered

Eight-hour-old loggerhead turtles (at right and below) hatched by Nova University are released for return to the ocean. The loggerhead has been listed as "threatened" and regulations designed to conserve the species are in effect.

Photos: Ralph F. Kresge

Species Act of 1973. The Departments of Commerce and Interior are charged with the responsibility of protecting endangered and threatened animals and plants.

The Department of the Interior, through its Fish and Wildlife Service, has the responsibility for the protection of sea turtles while the turtles are on land. The Department of Commerce, through its National Oceanic and Atmospheric Administration's National Marine Fisheries Service, has responsibility for sea turtles while they are in the water.

Since the law was enacted, all species of sea turtles have received some degree of protection under it. The law permits turtles to be protected in two major ways.

A species may be declared endangered or it may be declared threatened.

An endangered species is "any species which is in danger of extinction throughout all or a significant part of its range." A threatened species is "any species which is likely to become an endangered species within the foreseeable future throughout all or a significant part of its range."

The Atlantic ridley, leatherback, and hawksbill have been listed as endangered for a number of years.

In August 1978, the loggerhead, Pacific ridley, and green were listed as threatened for all populations worldwide. In addition, the Pacific ridley was listed as endangered along the west coast of Mexico, and the green was listed as endangered in Florida and along the west coast of Mexico.

When a species is listed as endangered, it is illegal to take, transport, or trade that species with limited exceptions.

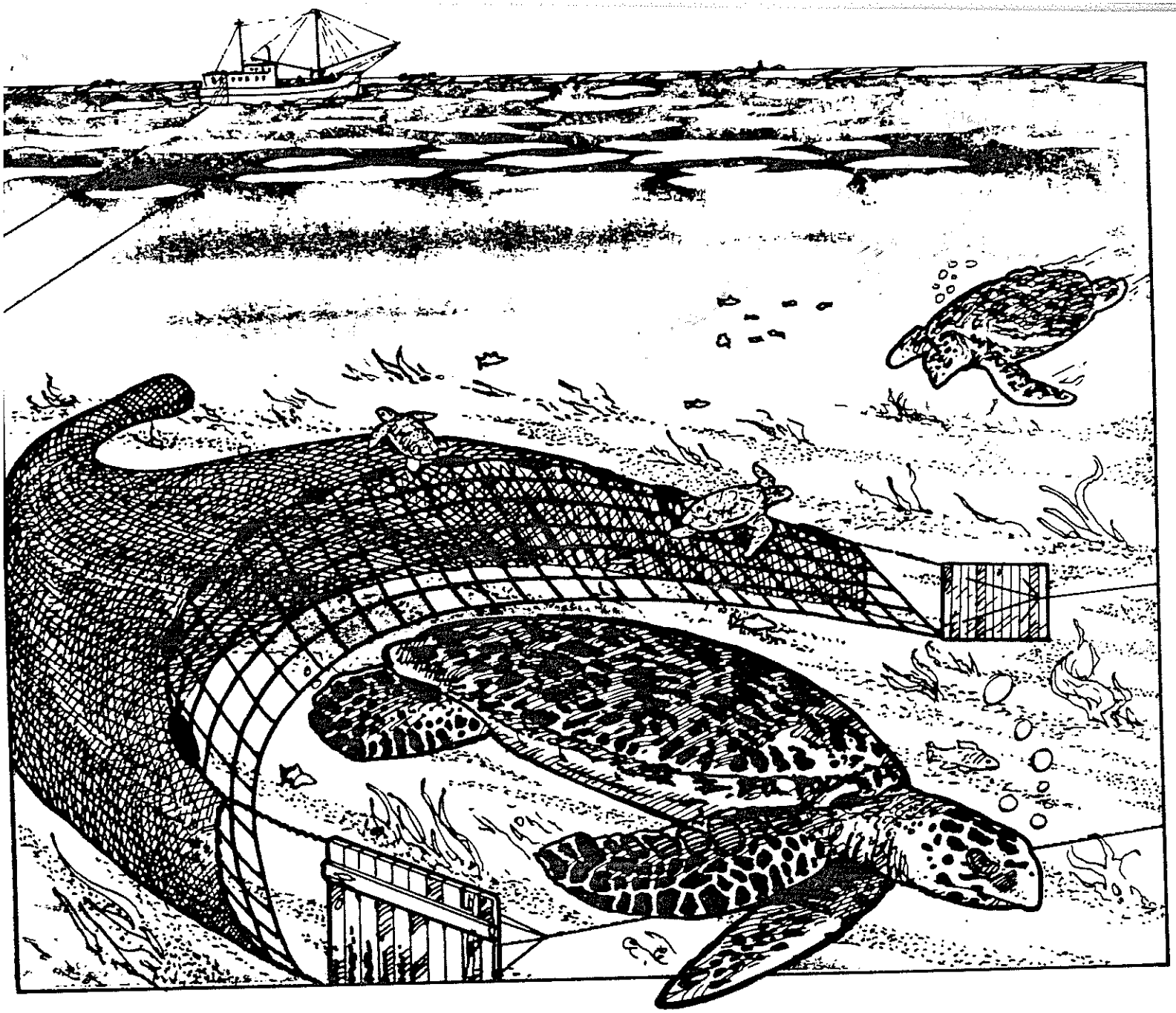
When a species is listed threatened, regulations that are necessary to conserve that species must be adopted.

One of the major threats to the loggerhead is the danger of becoming entangled in the trawl nets of shrimpers. Under present regulations, shrimp fishers are required to try to revive turtles caught in their nets by laying the turtles on their backs and pressing on their undersides until they are revived.

The National Marine Fisheries Service has been conducting tests for over a year to develop "excluder panels," and has chartered commercial shrimp vessels to support this work. The excluder panel is a piece of large mesh net that is placed across the front of the mouth of the shrimp trawl. As the trawl is dragged along the bottom, the face of the net is held open by two large wooden "trawl doors." The panel is stretched across the opening and keeps the turtles from going into the net while at the same time permitting the shrimp to go into the net through the mesh.

Shrimp vessels from Georgia and northeast Florida and the Gulf of Mexico have cooperated with the Service since the fall of 1977 in testing the panels under actual fishing conditions. Initial panel designs have been effective in reducing sea turtle capture and good progress is being made towards maintaining a shrimp catch while using the excluder panel.

Other steps are being taken to stop the decline of sea turtle populations. The Service has proposed that the Cape Canaveral Ship Channel, where loggerhead and Atlantic ridleys are



known to hibernate in the winter, be designated as critical habitat. Areas off St. Croix in the Virgin Islands and the Mona Island in the Caribbean are also being considered for possible designation as critical habitat.

When an area is designated a critical habitat, all Federal agencies are required to consult with the National Marine Fisheries Service or the Fish and Wildlife Service to insure that any actions they may take in the area will not destroy or adversely modify the habitat.

Because a critical habitat designation only affects actions of the Federal Government, some areas of seasonal turtle concentrations will probably have to be established under the Act as restricted fishing areas, so as to minimize further the harmful impact of fishing activities.

Information to support a proposed designation of Cape Canaveral Channel, Florida, as a Restricted Fishing Area has been obtained by a commercial shrimp vessel, chartered by NMFS to conduct turtle excluder trawl research. The vessel found loggerhead sea turtles hibernating in the Channel where commercial shrimping was occurring. Several Atlantic ridleys were also found in this area. This is the first known area of hibernation for either species. If the area is proposed as an RFA, controls could include use of the excluder panel, limitation of trawl-drag time to one hour, and, possibly, a closure of the Channel to bottom trawling during the winter months.

Concentrations of sea turtles have been observed off South Carolina and Georgia where shrimping occurs. However, the Service does not have sufficient information to restrict these areas to commercial shrimping at this time.

While the Endangered Species Act seeks to protect endangered and threatened species worldwide, Federal control under the Act is limited to persons subject to U.S. jurisdiction. Since sea turtles are migratory species with circumglobal ranges, management and restoration of sea turtles is an international problem. No domestic program will succeed if it does not have international cooperation.

Such an international program must encompass complementary international controls on take, commercial trade, habitat protection, research, and the reduction of incidental catch in commercial fishing operations.

The United States will seek agreements with foreign nations which have fisheries that take sea turtles incidentally to encourage those nations to adopt conservation measures, such as the excluder panel, to reduce the incidental take.

The United States is working with Mexico on a bilateral agreement on sea turtle management that could serve as a model for similar agreements with other countries. The last surviving breeding colony of Atlantic ridley turtles breeds on the Gulf of Mexico in Mexico at Rancho Nuevo. Cooperative efforts to preserve and protect this colony have been initiated by Mexico, NMFS, FWS, the National Park Service, and the Texas Parks and Wildlife Department. Similar programs should be developed for the green and Pacific ridley turtles on the west coast of Mexico. □